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APR 1960

911 COMPLETE SPECIFICATION  
2 SHEETS This drawing is a reproduction of  
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SHEETS 1 & 2

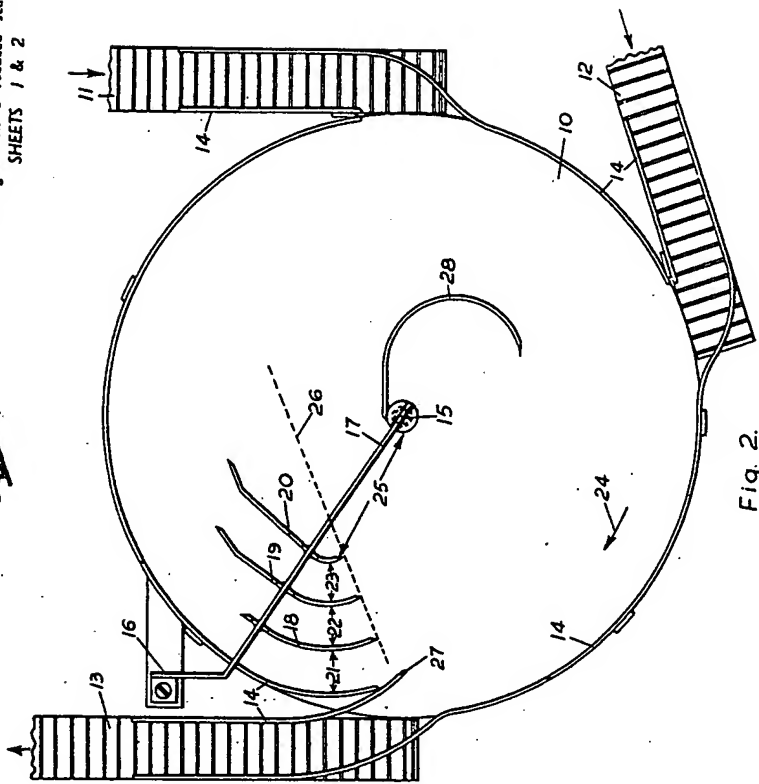


Fig. 2.

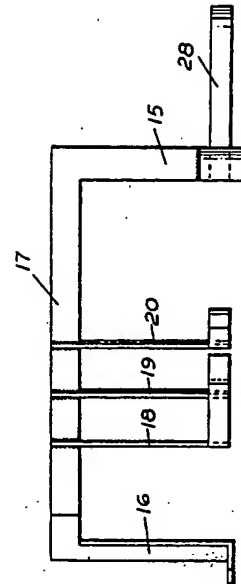


Fig. 3.

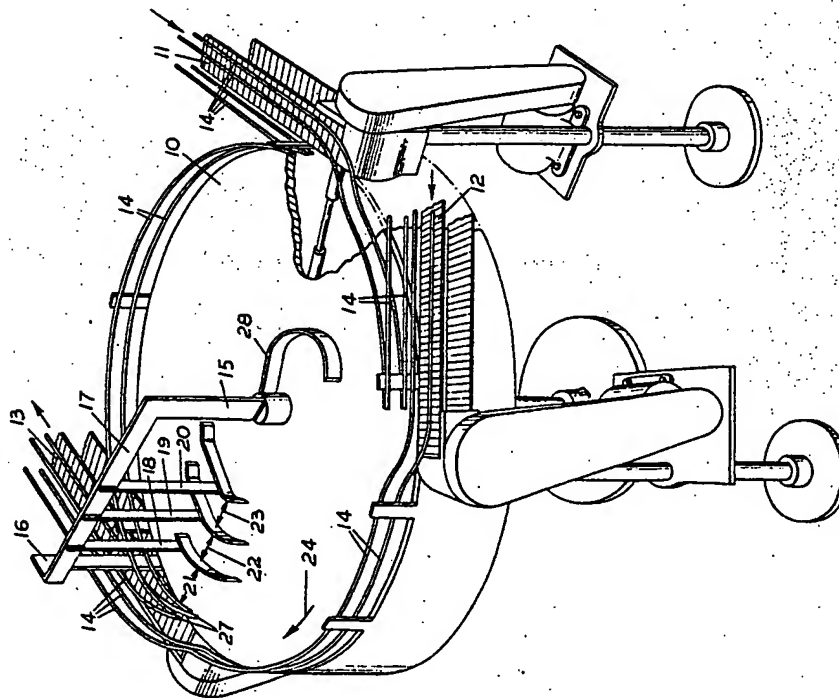


Fig. 1.

198/347,1

# PATENT SPECIFICATION

831,911

DRAWINGS ATTACHED.

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## COMPLETE SPECIFICATION.

### Improvements in or relating to Rotary Bottle Filing Tables.

We, BRATBY & HINCHLIFFE LIMITED, a British Company, of Gorton Lane, Manchester 18, in the County of Lancaster, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns rotary bottle filing tables.

Such tables are employed, for instance in bottle filling stations, to receive bottles from one or more inlet conveyors and to feed them in file to one or more outlet conveyors. One advantage of the filing table resides in the fact that it provides, between the inlet and outlet conveyors a position wherein bottles can, if necessary, accumulate within limits, in the event that the outlet conveyor or conveyors become filled or are unable to receive further bottles from the table. Such arrangement is particularly advantageous, for example, where bottles from a number of filling machines are being fed to one or more labelling machines. If a temporary breakdown requiring only minor attention should occur at the labelling machines, it is not necessary to stop the filling machines immediately, since additional bottles can be accommodated by the filing table sufficient to permit a short period to be available for such repair.

Moreover the filing table enables the various machines to be run without any precise synchronisation therebetween.

Bottle filing tables hitherto proposed generally comprise a circular rotary table wherever is disposed a stationary guide which serves solely to displace bottles laterally towards the outer periphery of the table, so that if bottles are fed thereto

quickly, any which become displaced towards the centre of the table are caused to move towards the outer edge of the table, to ensure that they are taken up by the outlet conveyor or conveyors. The prior arrangements, however, suffer from the defect that the guide has a "funnelling" effect on the bottles, tending to cause the bottles to accumulate in a passageway, which converges to a width just greater than the diameters of the bottles, between the guide and the outer edge of the table, with the result that frequent jamming occurs.

An object of this invention is to provide a filing table wherein such jamming is obviated, the arrangement permitting bottles to be carried around on the table when an excess of bottles is thereon.

According to the present invention a rotary bottle filing table comprises guide means providing a plurality of adjacent passages there-through in such manner that a bottle passing through one of said passages will be displaced laterally towards the outer periphery of the table, so that, upon next approaching the guide means it will be aligned with the next adjacent passage, there being, between the passage closest to the table axis (i.e. the innermost passage) and such table axis, a space permitting the undeflected passage of bottles therethrough.

With such arrangement, bottles on the table are deflected towards the outer edge thereof stepwise, upon each rotation of the table, until, upon passing through the outermost passage, they are disposed on the outer periphery of the table.

To prevent bottles accumulating at the centre of the table, there is preferably a subsidiary deflector which is disposed away from the guide means and which is arranged

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so as to deflect any bottle which passes through the space between the innermost passage and the table axis to align it with the said innermost passage.

5 The entry ends of the adjacent passages should, for preference, be offset relative to one another so that they do not extend radially across the table, but are disposed effectively on a chord of the circle of the  
10 table so that when an accumulation of bottles approaches the passages any bottles which cannot be accommodated by the passages are deflected towards the space between the innermost passage and the table axis.

15 The invention will be described further, by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is a perspective view of a practical embodiment of filing table constructed in accordance with the invention;

20 Figure 2 is a plan view of the filing table of Figure 1; and

Figure 3 is an elevation of the guide means of the filing table of Figures 1 and 2.

25 A rotary bottle filing table in accordance with this invention comprises a circular table 10 adapted to be rotated about its vertical axis and having associated with it a pair of inlet conveyors 11, 12 and an outlet conveyor  
30 13, guide rails 14 being provided to ensure that bottles (not shown) from the inlet conveyors 11, 12 move on to the outer periphery of the table 10 and bottles on the outer periphery of the table 10 will move on to the  
35 outlet conveyor 13, all in known manner.

Disposed above the table are guide means, and these comprise a first stationary vertical post 15 mounted (e.g. by a suitable journal)  
40 on the shaft (not visible) on which the table 10 rotates so as to remain stationary when the shaft rotates and a secondary stationary post 16 disposed adjacent the outer periphery of the table 10. A cross-member 17 extends bridge-wise between such posts 15 and 16  
45 substantially radially of the table.

Secured to the cross-member are a plurality of guides 18, 19 and 20, each made of sheet metal, and each substantially of inverted T shape, being secured to the cross-member  
50 with the cross-bars of the Tees (which are lowermost) disposed a short distance from the surface of the table 10, as can best be seen in Figure 1. Such cross-bars are positioned to provide between them a plurality  
55 of short passages 21, 22 and 23 which are equidistantly from the axis of the table 10, but which, instead of extending roughly equidistantly from the axis of the table 10, extend outwardly of the table 10, so that a  
60 bottle carried through one of the passages by rotation of the table in the direction of arrow 24 would be deflected towards the outer periphery of the table 10.

The widths of the passages 21, 22, 23  
65 provided by the guides are such as to permit

a bottle to pass comfortably therethrough, and the number of passages so provided may, of course, be greater or smaller than those shown, according to the diameter of the table. However, the number of guides  
70 provided is such as to leave between the innermost guide 20 (i.e. that guide which is closest to the axis of the table 10) and the post 15, a space 25 sufficient to permit bottles to pass freely therebetween, so that bottles  
75 can pass the guide means with necessarily passing through the passages 21, 22 and 23.

Furthermore, the cross-bars of the respective Tees of the guides 18, 19, 20 are of different lengths and this is effected so as to ensure that the entries to the various  
80 passages 21, 22 and 23 are not disposed radially of the table, a line 26 taken through the leading edges or tips of the cross-bars of the Tees extending substantially chordally  
85 of the table.

The angles and curvatures of the guides 18, 19 and 20 and the lengths of the passages 21, 22, 23 defined thereby are related to the sizes of the bottles being dealt with in such  
90 manner that a bottle passing through one passage (e.g. passage 23) is deflected laterally so that, as it approaches the guide means upon the next subsequent revolution of the table 10, it is substantially in align-  
95 ment with the next adjacent passage (i.e. passage 22). The outermost passage 21 is arranged, of course, so that it will deflect a bottle passing therethrough to the outer edge of the table 10 so that such bottle will  
100 be displaced by a projecting part 27 of the conveyor guide 14 of the outlet conveyor 13 on to such conveyor 13.

Also secured to the first upright post 15 is a deflector 28, this projecting from the  
105 post 15 away from the cross-member 17 previously described, and being disposed so that it is encountered by bottles which pass the guide means through the space 25 between the innermost guide 20 and the  
110 table axis. Such deflector 28 is made of spring steel strip and is cam shaped, being arranged to deflect any bottles which pass through the space 25 aforesaid into alignment with the first passage 23.

In operation, bottles fed on to the table 10 by the inlet conveyors 11 and 12 will be deposited on the outer periphery of the table and will normally be carried round to the  
115 outlet conveyor 13 without passing the guide means, the projecting part 27 of the outlet conveyor guide rails 14 being disposed in advance of the guide means. The table will operate in this manner all the time the outlet  
120 conveyor 13 is able to accept or receive all the bottles from the inlet conveyors 11 and 12. Should occasion arise when the supply of bottles on to the table is such that it cannot be dealt with by the outlet conveyor  
125 13 (e.g. if the outlet conveyor 13 is stopped, 130

or becomes filled, or if the speed of the inlet conveyors 11, 12 is increased) excess bottles build up at and are carried past the projecting part 27 of the outlet conveyor guide rails 14, being deflected towards the centre of the table by bottles held stationary by such projecting part 27. These excess bottles then pass through one or other of the passages 21, 22, 23 defined by the guides 18, 19, 20 of the guide means and are deflected, stepwise, upon each rotation of the table until they are once again on the outer periphery of the table and can be taken up by the outlet conveyor 13.

In the event that a large number of bottles accumulate before the passages 21, 22, 23 of the guide means, the offset arrangement of the entries to such passages is such as to tend to deflect approaching bottles towards the space 25 between the innermost guide 20 and the table axis, so that some of the bottles are carried past the guide means and are subsequently aligned with the innermost passage 23 by the deflectors 28. This ensures that no jamming at the guide means can occur, since the space 25 is always available for the passage of bottles therethrough.

If desired, the arrangement of the guides may be such as to permit adjustment thereof vertically/and/or laterally to accommodate different sizes of bottles, for instance the guides 18, 19 and 20 may be interconnected so that adjustment of one causes simultaneous adjustment of the others. In practice, however, it is preferable to provide a separate guide means assembly for each size of bottle likely to be used with a particular filing table, it being very simple to remove one assembly and replace it by another when the apparatus is to be used with different sized bottles.

It is to be understood that the invention is not restricted to the precise details of the foregoing example, and that variations may be made thereto without departing from the scope of the appended claims.

#### WHAT WE CLAIM IS:—

1. A rotary bottle filing table comprising

guide means providing a plurality of adjacent passages therethrough in such manner that a bottle passing through one of said passages will be displaced laterally towards the outer periphery of the table, so that, upon next approaching the guide means it will be aligned with the next adjacent passage, there being, between the passage closest to the table axis (i.e. the innermost passage) and such table axis, a space permitting the undeflected passage of bottles therethrough.

2. A rotary bottle filing table as claimed in Claim 1 which has a subsidiary deflector which is disposed away from the guide means and which is arranged so as to deflect any bottle which passes through the space between the innermost passage and the table axis to align it with the said innermost passage.

3. A rotary bottle filing table as claimed in Claim 1 or 2 wherein the entry ends of the adjacent passages are offset relative to one another so that they do not extend radially across the table, but are disposed effectively on a chord of the circle of the table so that when an accumulation of bottles approaches the passages any bottles which cannot be accommodated by the passages are deflected towards the space between the innermost passage and the table axis.

4. A rotary filing table as claimed in Claim 1, 2 or 3 wherein the guide means comprises a cross-member disposed radially above the table and supporting a plurality of guides of inverted-T shape, with the cross-bars of the Tees just above the surface of the table.

5. A rotary filing table constructed, arranged and adapted to operate substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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#### PROVISIONAL SPECIFICATION.

#### Improvements in or relating to Rotary Bottle Filing Tables.

We, BRATBY & HINCHLIFFE LIMITED, a British Company, of Gorton Lane, Manchester 18, in the County of Lancaster, do hereby declare this invention to be described in the following statement:—

This invention concerns rotary bottle filing tables.

Such tables are employed, for instance in bottle filling stations, to receive bottles from one or more inlet conveyors and to feed

them in file to one or more outlet conveyors. One advantage of the filing table resides in the fact that it provides, between the inlet and outlet conveyors a position wherein bottle can, if necessary, accumulate within limits, in the event that the outlet conveyor or conveyors become filled or are unable to receive further bottles from the table. Such arrangement is particularly advantageous for example, where bottles from a number

of filling machines are being fed to one or more labelling machines. If a temporary breakdown requiring only minor attention should occur at the labelling machines, it is not necessary to stop the filling machines immediately, since additional bottles can be accommodated by the filing table sufficient to permit a short period to be available for such repair.

Moreover the filing table enables the various machines to be run without any precise synchronisation therebetween.

Bottle filing tables hitherto proposed generally comprise a circular rotary table whereover is disposed a stationary guide which serves solely to displace bottles laterally towards the outer periphery of the table, so that if bottles are fed thereto quickly, any which become displaced towards the centre of the table are caused to move towards the outer edge of the table, to ensure that they are taken up by the outlet conveyor or conveyors. The prior arrangements, however, suffer from the defect that the guide has a "funnelling" effect on the bottles, tending to cause the bottles to accumulate in a passageway, which converges to a width just greater than the diameters of the bottles, between the guide and the outer edge of the table, with the result that frequent jamming occurs.

An object of this invention is to provide a filing table wherein such jamming is obviated, the arrangement permitting bottles to be carried around on the table when an excess of bottles is thereon.

According to the present invention a rotary bottle filing table comprises guide means providing a plurality of adjacent passages therethrough in such manner that a bottle passing through one of said passages will be displaced laterally towards the outer periphery of the table, so that, upon next approaching the guide means it will be aligned with the next adjacent passage, there being, between the passage closest to the table axis (i.e. the innermost passage) and such table axis, a space permitting the undeflected passage of bottles therethrough.

With such arrangement, bottles on the table are deflected towards the outer edge thereof stepwise, upon each rotation of the table, until, upon passing through the outermost passage, they are disposed on the outer periphery of the table.

To prevent bottles accumulating at the centre of the table, there is preferably a subsidiary deflector which is disposed away from the guide means and which is arranged so as to deflect any bottle which passes through the space between the innermost passage and the table axis to align it with the said innermost passage.

The entry ends of the adjacent passages should, for preference, be offset relative to

one another so that they do not extend radially across the table, but are disposed effectively on a chord of the circle of the table so that when an accumulation of bottles approaches the passages any bottles which cannot be accommodated by the passages are deflected towards the space between the innermost passage and the table axis.

The invention will be described further by way of example with reference to one practical embodiment thereof, it being evident, however, that variations may be made to such embodiment without departing from the scope of the invention.

A rotary bottle filing table in accordance with this invention comprises a circular table adapted to be rotated about its vertical axis and having associated with it one or more inlet conveyors and outlet conveyors, guides being provided to feed bottles from the inlet conveyors onto the outer periphery of the table and from the outer periphery of the table onto the outlet conveyors, all in known manner.

Disposed above the table are guide means, and these comprise a first stationary vertical post mounted (e.g. by a suitable journal) on the shaft on which the table rotates so as to remain stationary when the shaft rotates and a second stationary post disposed adjacent the outer periphery of the table. A cross-member extends bridge-wise between such posts, substantially radially of the table.

Secured to the cross-member are a plurality of guides, each made of sheet metal, and each substantially of inverted-T shape, being secured to the cross-member with the cross bars of the Tees (which are lowermost) disposed a short distance from the surface of the table. Such cross bars are positioned to provide, between them, a plurality of short passages which conform to the rotary direction of the table, but which, instead of extending roughly equidistantly from the axis of the table, extend outwardly of the table, so that a bottle carried through one of the passages would be deflected towards the outer periphery of the table.

The widths of the passages provided by such cross bars of the Tees are such as to permit a bottle to pass comfortably therethrough, and the number of passages so provided is, of course, dependent on the diameter of the table. However, the number of guides provided is such as to leave between the innermost guide (i.e. that guide which is closest to the axis of the table) and the axis of the table, a space sufficient to permit bottles to pass freely therebetween, so that bottles can pass the guide means without necessarily passing through the passages.

Furthermore, the cross bars of the

5 respective Tees of the guides are of different lengths and this is effected so as to ensure that the entries to the various passages are not disposed radially of the table, a line taken through the leading edges or tips of the cross bars of the Tees extending substantially chordally of the table at that side of the axis of the table remote from the entries to the passages.

10 The angles of the guides and the lengths of the passages defined thereby are related to the sizes of the bottles being dealt with in such a manner that a bottle passing through one passage is deflected laterally so that, as it approaches the guide means upon the next subsequently revolution of the table, it is substantially in alignment with the next adjacent passage. The outermost passage is arranged, of course, so that it will deflect a bottle passing therethrough to the outer edge of the table and will be displaced by a conveyor guide onto an outlet conveyor.

25 Also secured to the first upright post is a deflector, this projecting from the post away from the cross-member previously described, and being disposed so that it is encountered by bottles which pass the guide means through the space between the innermost passage and the table axis. Such deflector is made of spring steel strip and is cam shaped, being arranged to deflect any bottles which pass through the space aforesaid into alignment with the first passage.

35 In operation, bottles fed onto the table by the inlet conveyors will be deposited on the outer periphery of the table and will normally be carried round to an outlet conveyor without passing the guide means, the outlet conveyor guides being disposed in advance of the guide means. The table will

operate in this manner all the time the outlet conveyors are able to accept or receive all the bottles from the inlet conveyors. Should occasion arise when the supply of bottles onto the table is such that it cannot be dealt with by the outlet conveyors (e.g. if one outlet conveyor is stopped or becomes filled or if the speed of the inlet conveyors is increased) the excess bottles are carried past the outlet conveyor guides, being deflected towards the centre of the table by bottles held stationary by such outlet conveyor guides. They then pass through one or other of the passages defined by the guides of the guide means and are deflected, stepwise, upon each rotation of the table until they are once again on the outer periphery of the table and can be taken up by the conveyor guides.

In the event that a large number of bottles accumulate before the passages of the guide means, the offset arrangement of the entries to such passages is such as to tend to deflect excess bottles towards the space between the innermost guide and the table axis, so that some of the bottles are carried past the guide means and are subsequently aligned with the innermost passage by the deflector. This ensures that no jamming at the guide means can occur.

If desired, the arrangement of the guides may be such as to permit adjustment thereof both vertically and laterally to accommodate different sizes of bottles, the guides being interconnected so that adjustment of one causes simultaneous adjustment of the others.

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